SHORT REPORT

Medicinal role of papaya seeds on thrombocyte count tested on healthy rabbits

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Abstract

The main objective of the current study is to evaluate the medicinal role of Papaya seeds on thrombocyte count and hepatic parameter on healthy rabbits. Experimental and Interventional study, at the Department of pharmacology Baqai Medical University Karachi. Rabbits (18 in number different age and both sex) were included, subsequently subdivided into three group (n=6). Group A (Control), B and C (sample fed dose 250 & 500mg OD, oral route). Blood were drawn 0 time, subsequently samples were drawn at 15, 30, 45 days. Data was analyzed by using SPSS 19.0. Analysis of results showed increase in the Platelet level 19.2%, 65.5%. No significant change seen in the SGPT, Alkaline Phosphatase, WBC, Neutrophil, Lymphocytes, Eosinophils and Monocytes as compared with the controls. It can be concluded that the administration of Papaya seeds powder dose rapidly increase platelet count and may play an important therapeutic role in thrombocytopenia.

Keywords: Papaya Seeds, Dengue Fever, Thrombocytopenia.

Introduction

Carica Papaya is a commonly available edible fruit, belongs to the family of Caricaceae, well known for its nutritional and medicinal value.[1,2] The nutritional content of fruit is composed of vitamin A, vitamin C, Calcium, chymopapain and papain etc.[3,4] Particularly papain present in fruit, leaves and seeds is an important proteolytic enzyme that can be used in protein digestion, arthritis, poultice into nervous pains, elephantoid growths and intestinal worms, increase immune system and may also promote the release of natural chemicals that attack tumour cells.[5] CP seeds reported to be a rich source of protein, lipid and crude fiber etc,[6] clinically used as antibacterial against gram +ve and gram -ve bacteria particularly Pseudomona aeroginosa and, Salmonella typhi,[7] anti-hyperglycaemic, abortifacient, and anti-helminthic activity has been reported.[8-10]

Recently in the last few years the epidemic of dengue fever has caused serious mortality or morbidity in Pakistani society. The DF is usually associated with decrease in the platelet counts and no specific treatment or management for DF has yet been discovered. Since different parts of papaya plants are used for the management of DF. Therefore, the objective of the present study was to examine the effect of CP seeds powder on the thrombocytes count and liver for safety profile, in view of traditional beneficial therapeutic effects that are said to increase the total thrombocyte counts in clinical situations like DF.

Methods and Results

The experimental and interventional study was conducted in Baqai Medical University, Karachi. Healthy adult rabbits were kept in the animal house under standard condition and fed fresh hay and water. The sample size of the study was calculated by using resource equation method. Since there were 3 groups in the study and the researcher has decided to keep 7 rabbits in each group. Based on the resource equation method the sample size calculated was 18 (E= Total no. of animals — total no. of group). The animals were divided into 3 equal groups of 6 each. Group A was the control group and was maintained on standard diet. However, Group B and Group C were fed sample test meal 250mg and 500mg once a day administered orally for 45 days.

In this study, the CP seeds were dried at room temperature for 2 weeks and then were crushed and ground in an electric blender and coarse powder was prepared. The fine powder was measured using electric balance and packaged in small plastic envelops and then stored pending usage for 7days. CP seeds powder after dissolving in 10 ml of water was administered orally by feeding syringe. In order to measure the hepatic safety profile and thrombocytic effects of CP, blood was extracted from the large visible vein of the rabbit ear by venipuncture on day 0, 15, 30 and 45. Collected blood was transferred into desirable test tubes.

Data Analysis: All collected data was entered into SPSS version 19.0. Data on continuous variables include haematological parameters and biochemical parameters presented as Mean ± S.D.

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Table-1: Comparison of Platelet, WBC, Neutrophil, Lymphocytes, Eosinophils, Monocytes estimation test of Group B and C from Baseline (Day 0).

	Group A			Group B			Group C		
	Baseline Mean±SD	Test Cumulative Mean±SD	%	Baseline Mean±SD	Test Cumulative Mean±SD	%	Baseline Mean±SD	Test Cumulative Mean±SD	%
Platelet	475 ± 29.7	455 ± 39.5	-5.3	396 ± 15.0	472 ± 44.2	19.2	293 ± 20.2	486 ± 86.2	65.5
WBC	8.3 ± 1.14	8.4 ± 1.06	1.2	8.3 ± 1.34	8.2 ± 0.76	-1.3	9.7 ± 0.51	8.4 ± 0.63	-13.0
Neutrophil	12.0 ± 3.85	11.5 ± 3.71	-4.2	5.0 ± 0.89	5.9 ± 1.60	17.8	5.3 ± 1.21	7.5 ± 3.17	40.6
Lymphocytes	84.8 ± 4.36	84.6 ± 4.25	-0.3	91.3± 1.03	89.3 ± 5.98	-2.3	91.5 ± 0.84	88.8 ± 3.38	-2.9
Eosinophils	1.7 ± 0.52	2.0 ± 0.55	17	2.0 ± 0.00	1.7 ± 0.57	-13.9	2.0 ± 0.00	1.9 ± 0.64	-2.8
Monocytes	1.5 ± 0.55	1.8 ± 0.51	20	1.7 ± 0.52	1.6 ± 0.50	-3.3	1.5 ± 0.55	1.7 ± 0.57	14.8

Table-2: Platelet, WBC, Neutrophil, Lymphocytes, Eosinophils, Monocytes estimation test of Group B and C.

	Day-0 Mean ± S.D		Day-15 Mean ± S.D		Day-30 Mean ± S.D		Day-45 Mean ± S.D	
	250mg	500mg	250mg	500mg	250mg	500mg	250mg	500mg
Platelet	396±15.0	293±20.2	462±36.5*	410±112.2*	491±61.4*	524±14.4*o	464±30.5*	523±47.2* o
WBC	8.3± 1.34	9.7±0.51	7.8±0.42	8.5±0.46*	8.7±1.00	7.7±0.17*o	8.1±0.52	9.1±0.14
Neutrophil	5.0±0.89	5.3±1.21	10.3±9.69	5.5±1.87	5.8±1.17	10.3±3.61*o	6.0±2.10	6.7±1.51* o
Lymphocytes	91.3±1.03	91.5±0.84	85.8±9.75	90.5±1.87	91.5±1.38	85.5±3.62*o	90.5±1.64	90.5±1.52▲
Eosinophils	2.0± 0.00	2.0±0.00	2.0±0.00	2.2±0.41	1.2±0.41	2.2±0.75	2.0±0.63	1.5±0.55*o▲
Monocytes	1.7± 0.52	1.5± 0.55	1.8 ± 0.41	1.8 ± 0.41	1.5 ± 0.55	2.0 ± 0.63	1.5 ± 0.55	1.3 ± 0.52*

* Significant as compared to baseline
o Significant as compared to Day 15
▲ Significant as compared to Day 30.

The cumulative increase in the level of platelets among group B rabbits was 19.2% when compared with their baseline value, whereas the increment in the platelet level among Group C rabbits was 65.5% when compared with Baseline. Like platelets counts, Neutrophils counts also increase with increase in the dose of CP seeds extract, i.e. 17.8% in rabbits receiving 250 mg dose and 40.6% in rabbits receiving dose of 500 mg Table-1.

Sizable total platelet count has showed a 3.7% increase on standard dosing regimen of 250 mg compared to control value i.e. 455 ± 39.5 unit. The extended dosing regimen of 500 mg showed 6.8% platelet count compared to control value of 455 ± 39.5 and 3.7%.

Table-2 shows pronounced increment in platelets recorded when the CP seeds extract was administered on day 15 and day 30, but after 30 days i.e. on 45 days, there was no marked difference in the platelets counts among rabbits receiving 500 mg dose. In rabbits receiving 250 mg dosage, there was a decline in the platelet levels.

Discussion

CP belongs to the Caricaceae family and is an effective medicinal herb that is used as a folk medicine for the treatment of various diseases throughout the world. With rapid urbanization and global travel leading to drastic demographic changes, dengue is a threat to almost 40% of the world. There is still no specific treatment for dengue.

This study shows that there is a rationale behind the use of CP seeds powder in the treatment of thrombocytopenia. The results of this study suggests that CP seeds powder is effective in rapidly increasing platelet count in healthy rabbits with a standard dosing regimen and extended dosing regimen once a day with standard diet for 45 days. Total platelet count shows direct proportional incremental response, which is further reinforced with the observed escalation of the dose. Various researches have supported the traditional claim regarding the therapeutic potential of CP seeds for the management of DF. These results support the traditional claim that consumption of Papaya product in dengue fever are beneficial.

Conclusion

From the above results it is concluded that extract of seeds of CP have a potent effect that translates as incremental response in total platelet count. Further studies are required to establish the effectiveness and pharmacological rationale for the use of these seeds for DF.

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Conflict of Interest: I declare no conflict of interest.

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